

Claims

1. Process tank for gentle treatment of its contents, particularly treatment of organic material, including means for agitation,

- 5 **characterized** in that the process tank is a double tank comprising an inner tank (3) with perforated wall areas which are rotatably supported with bearings in an outer tank with a substantially vertical axis (R-R) of rotation, the perforated areas of the inner tank (3) being provided with gratings (18) and shovels (9) being arranged slantingly in the space between the inner and the outer tank, said shovels, during rotation of the inner tank,
- 10 contribute to the agitation of the fluid in the tank, and a lid (7) arranged to be raised and lowered on top of the inner tank, said lid preferably is also provided with gratings.

2. Process tank according to claim 1,
- characterized** in that the inner tank (3) is rotatably carried by an upper bearing (5) in the lid (6) of the outer tank, and that a lower bearing (4), mainly functions as a guide for
- 15 the inner tank.

3. Process tank according to claim 1,
- characterized** in that the inlet of raw material and the removal of solids takes place
- 20 through a conduit which communicates with a valve (8) arranged concentrically with the lower bearing.

4. Process tank according to claim 1,
- characterized** in that some of the shovels (9) between inner and outer wall (3, 2) are
- 25 stationary shovels fixedly arranged to the inside of the outer wall (2), and others are shovels attached to the outside of the inner wall (3) and thereby rotate along with the inner tank.

5. Process tank according to claim 1,
- 30 **characterized** in that the lid (7) on the inner tank is supported by a bushing (29) on a spline shaft (15) or the like, said spline shaft being arranged concentrically with the

NS tanks, the lid (7) being arranged to be lowerable by means of a braking mechanism on the spline shaft (15).

6. Process tank according to claim 1,
5 **characterized** in that a nozzle tube (24) is attached along the periphery of the lid (7), said nozzle tube being intended for washing the wall (3) of the inner tank, particularly in conjunction with lowering the lid (7).

7. Process tank according to claim 1,
10 **characterized** in that impellers (10) at the bottom of the inner tank contribute to moving extraction liquid from the ^{centre} centre of the tank out to the wall of the inner tank (3), and such that the liquid will pass through the gratings (18) out to the shovels (9) between the inner (3) and the outer wall (2).

- 15 8. Process tank according to claim 1,
✓ **characterized** in that the shaft (15) for the lid (7) is provided with a bore and that through this bore there is arranged the shaft of a scraping shovel (11) which can be ✓ lowered in the case of packing, to scrape away material covering the inlet/outlet ✓ communicating with the valve (8).

- 20 9. Process tank according to claim 1,
characterized in that guidance grooves (19) are arranged on the inside of the inner tank (3) to cooperate with grooves or castors (23) on the lid (7) to guide the movement of the lid up and down, while functioning as a ^{thread} thread for the lid.

- 25 10. Process tank according to claim 1,
characterized in that perforated tubes (26) are arranged along the entire length of one or more of the shovels (9) on the outer tank (2) for the supply of desired chemicals.

- 30 11. Method for processing organic material such as fish waste, crab shells, krill or plant material in which a gentle agitation of the material is preferred, by introducing the

material into a process tank together with a controlled amount of processing liquid and
subjecting said material to a process under *per se* known conditions,
characterized by the following steps,
utilizing a double process tank which comprises an inner tank with perforated wall areas
5 with gratings, said inner tank being rotatably supported with bearings in an outer tank
with a generally vertical axis of rotation,
choosing gratings with such a mesh size such that the entire solid material is retained in
the inner tank,
controlling process parameters like temperature and pH according to the nature of the
10 relevant process,
agitating the process liquid by allowing the inner tank to rotate relative to the outer tank
so that shovels between the inner and the outer tank facilitate a gentle agitation of the
material, and
compressing the solid material at the end of the treatment by means of a rising and
15 lowering lid on the inner tank prior to and during the draining of the processing fluid
from the tank.

12. Method according to claim 11,
characterized in that the filling of material takes place at the bottom of the tank through
20 a bottom valve and a filling tube which is located concentrically with the axis of the
tank, while the inner tank rotates, and with its lid in a top position.

13. Method according to claim 11,
characterized in that the processing liquid is an extraction liquid.
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14. Method according to claim 11,
characterized in that the wall of the inner tank is rinsed with water during whole or part
of the process period, through nozzles arranged at the underside of the movable lid.

30 15. Method according to claim 11,
characterized in that the residue is centrifuged and or compressed after completed
processing.

16. Method according to claim 11,
characterized in that the lid of the inner tank is raised and lowered at certain intervals during the process.

5 17. Method according to claim 11,
characterized in that the rotational direction of the inner tank is reversed when the tank is emptied of its solid contents.

18. Method according to claim 11,
✓ 10 characterized in that the liquid is drained from another outlet at the bottom of the outer tank with no communication into the inner tank. *not created*

19. Method according to claim 11,
✓ characterized in that the raw material is pumped into the tank together with a
15 transportation liquid such as water, and that this liquid may circulate while transporting the solid into the tank.

20. Method according to claim 11,
characterized in that the rinsing liquid supplied to the nozzle tube along the lid of the
20 inner tank is taken from the process tank. *MA*